

SPECIES: Scientific [common]	<i>Najas guadalupensis</i> [Southern naiad]
Forest:	Bridger-Teton National Forest
Forest Reviewer:	R.Lehman
Date of Review:	5/5/20
Forest concurrence (or recommendation if new) for inclusion of species on list of potential SCC: (Enter Yes or No)	

FOREST REVIEW RESULTS:

1. The Forest concurs or recommends the species for inclusion on the list of potential SCC:
Yes ___ No ___
2. Rationale for not concurring is based on (check all that apply):
Species is not native to the plan area _____
Species is not known to occur in the plan area _____
Species persistence in the plan area is not of substantial concern _____

FOREST REVIEW INFORMATION:

1. Is the Species Native to the Plan Area? Yes X No ___

If no, provide explanation and stop assessment.
2. Is the Species Known to Occur within the Planning Area? Yes X No ___

If no, stop assessment.

Table 1. All Known Occurrences, Years, and Frequency within the Planning Area

Year Observed	Number of Individuals	Location of Observations (USFS District, Town, River, Road Intersection, HUC etc.)	Habitat Description	Source of Information
7/1/1990	Unknown	U.S.A., Wyoming, Kendall Warm Springs, thermal stream from Warm Springs to Kendall Falls on the Green River. 295484.909638, 456330.928714	Aquatic in thermal stream. Elev. 6700 ft.	Mohlenbrock, 4989. Element Occurrence 2. (WYNDD GIS 2019)

The Consortium of Pacific Northwest Herbaria, Rocky Mountain Herbarium, and SEINet were also searched, and no additional occurrences were found (Consortium of Pacific Northwest Herbaria 2020; Rocky Mountain Herbarium 2020; SEINet 2020).

- a. Are all Species Occurrences Only Accidental or Transient?

Yes ___ No X

If yes, document source for determination and stop assessment.

- b. For species with known occurrences on the Forest since 1990, based on the number of observations and/or year of last observation, can the species be presumed to be established or becoming established in the plan area?

Yes X No ___

If no, provide explanation and stop assessment

- c. For species with known occurrences on the Forest predating 1990, does the weight of evidence suggest the species still occurs in the plan area?

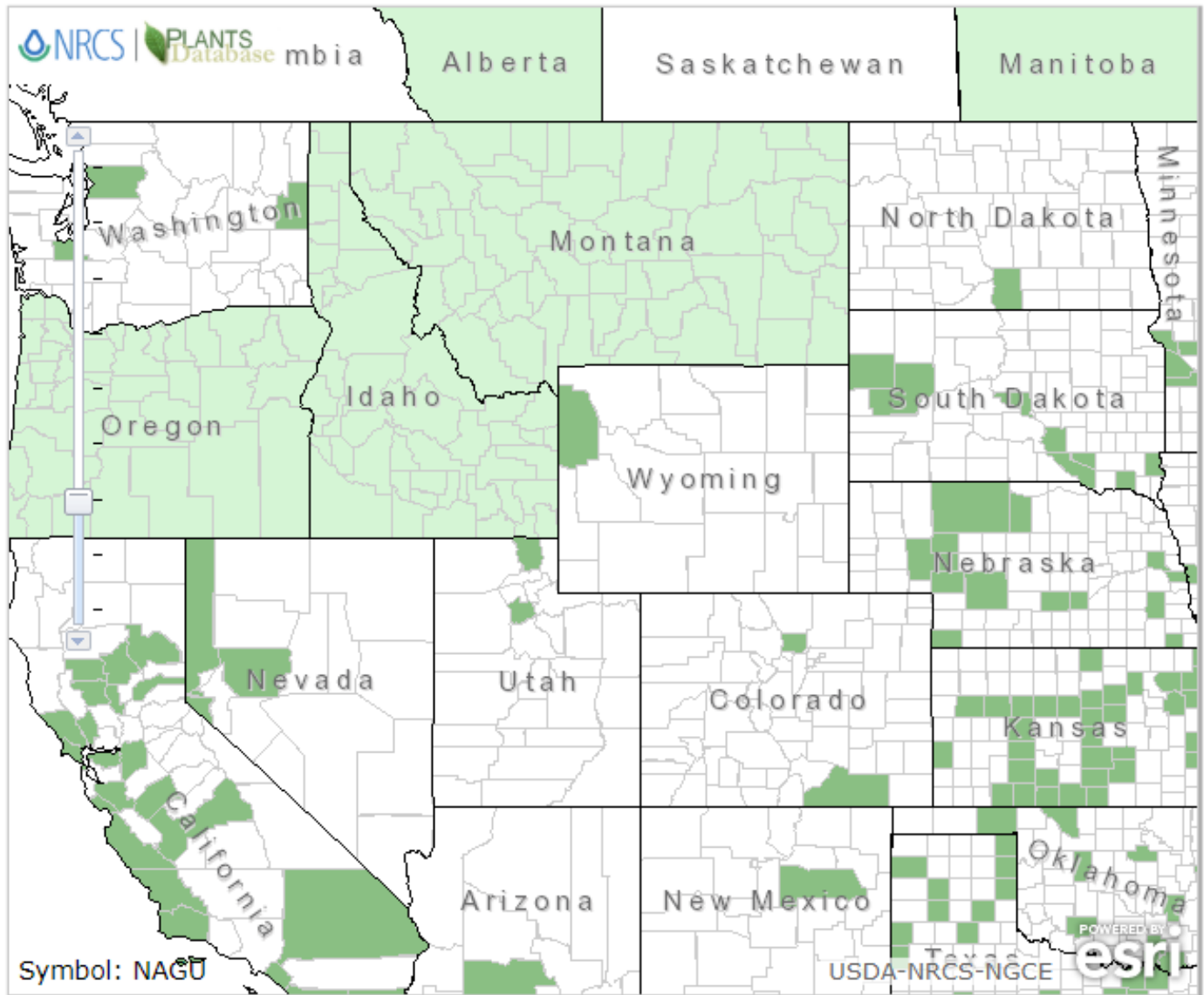
Yes ___ No ___ Unknown X

Provide explanation for determination

N/A—Occurrences have been documented in 1990.

If determination is no, stop assessment

Map 1, *Najas guadalupensis* in Wyoming and surrounding states (NRCS 2020).

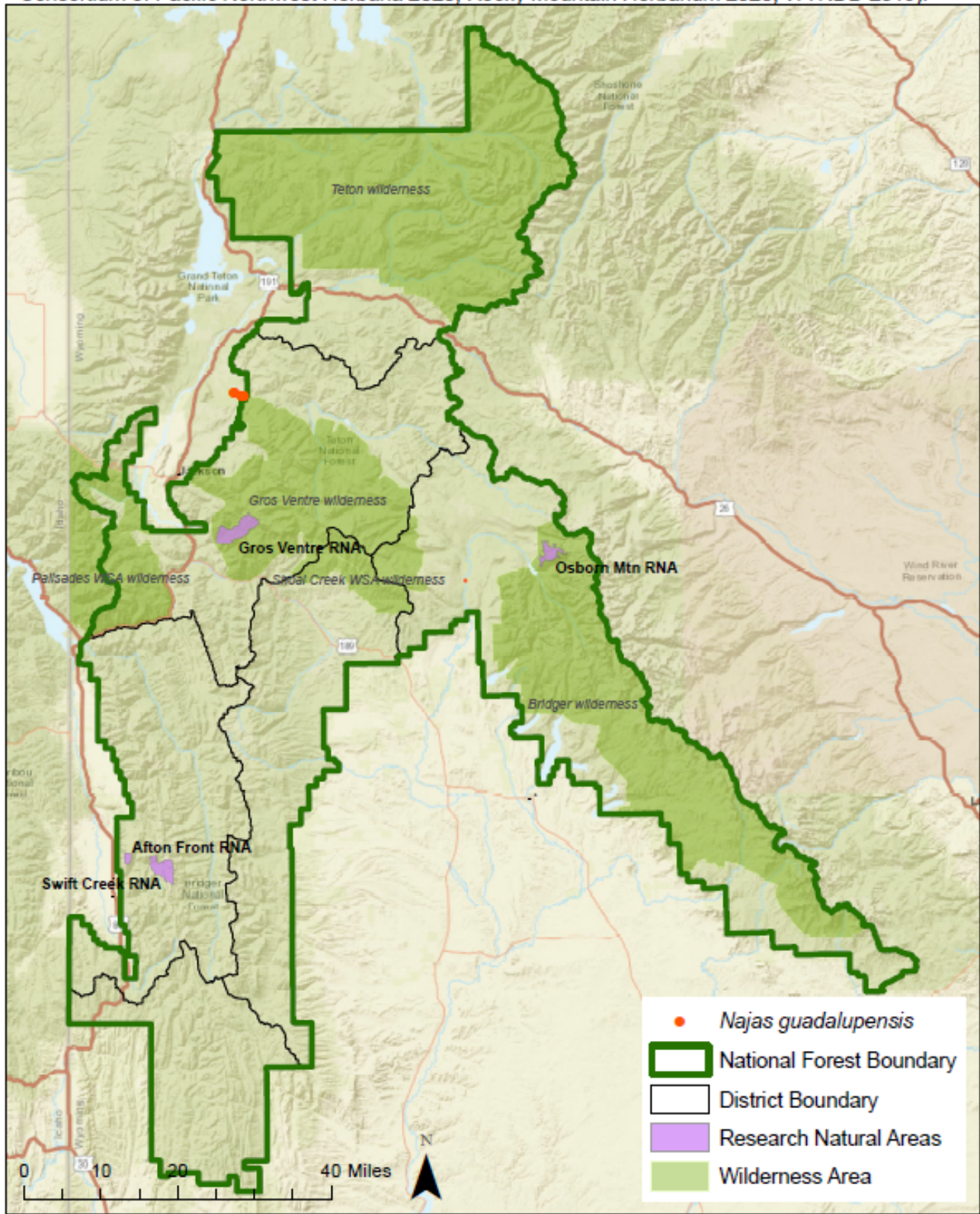


- | | | | |
|--|--|--|--|
| Native | Introduced | Both | Absent/Unreported |
| Native, No County Data | Introduced, No County Data | Both, No County Data | |

Native Status:

- | | | | | | | | | | |
|---|---|--|--|---|--|---|---|--|---|
| L48 | AK | HI | PR | VI | NAV | CAN | GL | SPM | NA |
|---|---|--|--|---|--|---|---|--|---|

Map 2. *N. guadalupensis* occurrences in Bridger-Teton National Forest vicinity (SEINet 2020; Consortium of Pacific Northwest Herbaria 2020; Rocky Mountain Herbarium 2020, WYNDD 2019).



3. Is There Substantial Concern for the Species' Capability to persist Over the Long-term in the Plan Area Based on Best Available Scientific Information?

Table 2. Status summary based on existing conservation assessments

Entity	Status/Rank (include definition)
NatureServe Global Status	G5—Secure <i>Common; widespread and abundant.</i>
NatureServe State Status	S1— Critically Imperiled <i>At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.</i>
WYNDD	Plant Species of Concern <i>Species vulnerable to extirpation at the global or state level due to:</i> <ul style="list-style-type: none"> <i>a. their rarity (e.g., restricted distribution, small population size, low population density)</i> <i>b. inherent vulnerability (e.g., specialized habitat requirements, restrictive life history)</i> <i>c. threats (e.g., significant loss of habitat, sensitivity to disturbances)</i> (Wyoming Natural Diversity Database - Species of Concern)
USDA Forest Service	Not Region 4 Sensitive
USDOI FWS	Not listed
USDOI BLM	Not listed
IUCN	Least concern

Sources: WYNDD 2020; Heidel 2018; USDA Forest Service Regions 2 and 4 Sensitive Species Lists; NatureServe 2020

Table 3. Status summary based on best available scientific information.

Criteria	Rationale
Distribution on the Bridger-Teton National Forest	<i>Najas guadalupensis</i> is known from one record on the Bridger-Teton National Forest. This population is located in Kendall Warm Springs in the central portion of the Forest (Table 1, Map 2). There are several other occurrences near the Forest boundary in Kelly Warm Springs of Teton County (Map 2). The scarcity of occurrences suggests this species is rare and isolated on the Forest.
Distribution outside the Bridger-Teton National Forest	<i>Najas guadalupensis</i> occurs from Oregon to California, widely scattered to the Atlantic coast; Mexico to South America, West Indies. In Wyoming, it is known from Jackson Hole (Teton County), the Big Horn Mountains foothills (Sheridan County), and Kendall Warm Springs on the west side of the Wind River Range (Sublette County) (WYNDD 2020).
Abundance on the Bridger-Teton National Forest	Population size is not known, but the total range is less than 5 acres (Heidel and Fertig 2001; WYNDD 2020). Abundance on the Bridger-Teton National Forest cannot be assessed due to lack of data.
Population Trend on the Bridger-Teton National Forest	Population trends are not known (WYNDD 2020). Trends on the Bridger-Teton National Forest cannot be assessed due to lack of data.
Habitat Trend on the Bridger-Teton National Forest	<p><i>Najas guadalupensis</i> occurs submerged in lakes, rivers and canals. Wyoming populations are in open water of thermally influenced pools, ponds and streams (WYNDD 2020).</p> <p>To analyze trends in occupied habitat, aerial imagery and a USFS GIS database of invasive plant populations, historical wildfires, trails, roads, Wilderness Areas, and Research Natural Areas was assessed at each contemporary occurrence on the Forest (USFS GIS 2019, Google Earth Pro 2020).</p> <ul style="list-style-type: none"> • Element Occurrence 2: Possibly within the Kendall Warm Springs Special Interest Area on Bridger-Teton National Forest, which was established to protect the Kendall Warm Springs dace and is fenced to exclude cattle; however, the occurrence is within an RMU and cattle may occasionally pass through fencing; not within any designated wilderness areas; not within perimeter of any major fire events; several roads run along or near the occurrence; near mapped invasions of non-native species (<i>Berteroa incana</i>, <i>Cirsium arvense</i>, <i>Carduus nutans</i>). <p>The above analysis suggests that habitat for <i>N. guadalupensis</i> has likely experienced low to moderate effects from natural and anthropogenic disturbances, and trends may be stable on the forest. However, climate change effects could degrade conditions, as described below.</p>

Criteria	Rationale
<p>Threats to the Species and its Habitat on the Bridger-Teton National Forest</p>	<p><i>Najas guadalupensis</i> is potentially threatened by recreation, weed invasion and exotic aquatic species (WYNDD 2020). The collection is possibly within the Kendall Warm Springs Special Interest Area (WYNDD 2020), which was established to protect the Kendall Warm Springs dace and its habitat. Riparian habitat and wetlands receive additional considerations and protections from disturbances through forest management direction and water regulations. These considerations and protections would avoid or minimize adverse effects to special status riparian and wetland plants, such as <i>N. guadalupensis</i>, where they occur.</p> <p>Although the Kendall Warm Springs Special Interest Area is fenced to exclude cattle, livestock may occasionally pass through fencing and enter the area. Grazing can impact wetlands by altering water quality, trampling herbaceous vegetation, increasing bare ground, and facilitating noxious weed expansion in riparian areas. Rangelands form a major component of ecosystems in the Bridger-Teton National Forest, and there are open rangelands throughout the Forest. While adherence to rangeland management plans will limit the chance of overgrazing, there is potential for impacts to <i>N. guadalupensis</i> and its habitat to occur.</p> <p>Riparian and wetland habitat may be threatened by climate change effects and disturbance or loss of wetland habitat. Changes in flow regimes, such as those from water diversions and dams, impact the amount, season, and timing of flows. This can substantially alter associated riparian and wetland species because of their dependence on fluvial geomorphic process, surface water, and groundwater. Floods are responsible for erosion, transport, and deposition of sediments, as well as the amounts and location of vegetation and debris. Many dominant riparian species, such as cottonwoods and willows, are pioneer species that depend on these events to provide bare, moist substrates necessary for seed germination and plant establishment (Halofsky et al. 2018).</p> <p>Mid-elevation riparian and wetland communities are rated as having a moderate to high sensitivity to climate change, moderate adaptive capacity, and moderate to high vulnerability (Halofsky et al. 2018). Mid-elevation riparian plant species may have the ability to move upward in elevation, but where resilience has been compromised by human uses, these systems may not be able to easily adjust to changes in their environment. Invasive species that already dominate many mid-elevation sites are likely to expand their dominance. As riparian areas become drier, upland species will continue to expand into these sites (Halofsky et al. 2018).</p> <p>Rare plant populations that may be small, isolated, tied to snowpack abundance and distribution timing changes of spring thaw and fall frost cycles, and/or have limited dispersal capacity, are highly vulnerable to impacts from environmental change (Ellstrand and Diane 1993, Halofsky et al. 2018).</p> <p>Invasive plants have been identified as a major threat to the biological diversity and ecological integrity within and outside the BTNF. Invasive plants create many adverse environmental effects, including, but not limited</p>

Criteria	Rationale
	<p>to: displacement of native plants; reduction in functionality of habitat and forage for wildlife and livestock; threats to populations of threatened, endangered and sensitive species; alteration of physical and biological properties of soil, including productivity; changes to the intensity and frequency of fires; facilitation of further invasive species invasions; and loss of recreational opportunities (Halofsky et al. 2018). The presence of invasive plant species may be compounded by the presence of cattle which may create an environment more conducive to the establishment of invasive plant species (Halofsky et al. 2018).</p>
<p>Life history and demographic characteristics of the species</p>	<p><i>Najas guadalupensis</i> is a submersed annual aquatic herb with slender, branched stems up to 7 dm long. The opposite, ribbon-like leaves are 0.5-2.5 cm long, 0.5-2 mm wide, usually with additional leaves in their axils, minutely toothed, and enlarged at the base. Tiny unisexual flowers are sessile and borne singly in the leaf axils, with both male and female flowers on the same plant. The male flowers have a single stamen enclosed in a translucent bract which is surrounded by a firmer bract, and the female flowers consist of a single naked pistil. The fruits are single-seeded with a thin, papery covering. The long, tapered seeds are round in cross-section, dull, and coarsely pitted with 10-20 rows of pits across the middle. The fruiting/flowering period is from late July to early September (Flora of North America 2020; Heidel and Fertig 2001; WYNDD 2020).</p>
<p>Date: April 23, 2020 Reviewer: L. Chipman</p>	

Summary and Recommendations

Species (Scientific and Common Name): *Najas guadalupensis* (southern naiad)

Najas guadalupensis has a conservation ranking of G5 S1. It occurs from Oregon to California, widely scattered to the Atlantic coast; and southward into South America and the West Indies. In Wyoming, it is known from several isolated locations across the state. The Bridger Teton Forest hosts one population documented at Kendall Warm Spring along the Green River. It is a submerged aquatic species found in submerged in lakes, rivers and canals, with the Wyoming populations found in thermally influenced pools. Total habitat on the Forest is limited to an area of approximately 5 acres.

Habitat for the single occurrence of *N. guadalupensis* is fenced off and receives protections in association with the Kendall Warm Springs Dace and receives wetland consideration under forest management. The area has not experienced fire. Nevertheless there are several potential threats to this population. Occasional trespass by cattle may encourage the spread of noxious weeds into wetland margins. The proximity of this site to roads which are either nearby or adjacent brings potential for recreational impacts and additional vector for colonization by exotic species. Exotic aquatic species are particularly rare in western Wyoming, but such an introduction could be detrimental. Affects of climate change or hydrologic management may alter the local water regime to the detriment of the single population. As an annual species, a short term but severe disturbance may greatly degrade the ability of the population to persist.

From a broad perspective the species occurs quite sporadically across its distribution in the US. That is, no single jurisdiction has management over the core of this species populations. It may therefore be useful grant special status to outlier populations such as that found on the Bridger-Teton. However, because habitat already receives special consideration for a rare fish, this conservation need may be diminished. Given consideration for existing protections and potential threats, it is not recommended that this species be included as a species of conservation concern.

Evaluator: Jessica Irwin & Rose Lehman Date: 04/2021;

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